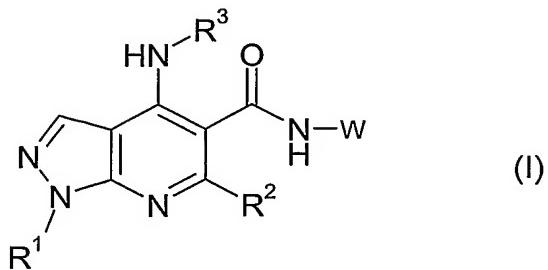


CLAIMS

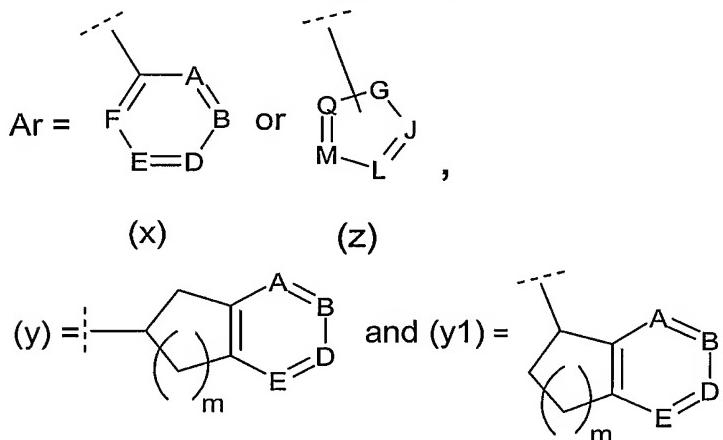
1. A compound of formula (I) or a salt thereof (in particular, a pharmaceutically acceptable salt thereof):

5



wherein:

10 W is Ar, $-\text{CR}^4\text{R}^5\text{Ar}$ or a group (y) or (y1) wherein:



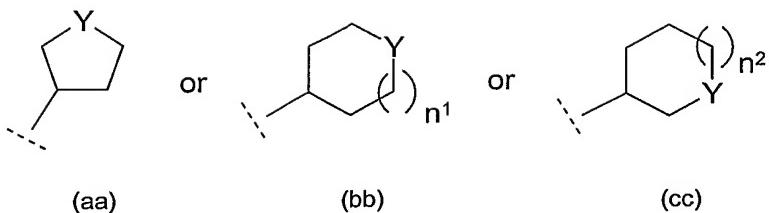
wherein $m = 1$ or 2

R^1 is C_{1-4} alkyl, C_{1-3} fluoroalkyl, or $-CH_2CH_2OH$;

15 R² is C₂₋₆alkyl, C₃₋₆cycloalkyl or -(CH₂)_n⁴C₃₋₆cycloalkyl, wherein n⁴ is 1 or 2;

R^3 is optionally substituted C₃₋₈cycloalkyl or optionally substituted mono-unsaturated-C₅₋₇cycloalkenyl or an optionally substituted heterocyclic group of sub-formula (aa), (bb) or (cc);

20



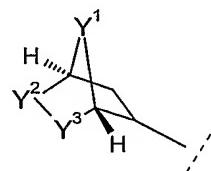
in which n^1 and n^2 independently are 1 or 2; and in which Y is O, S, SO₂, or NR¹⁰; where R¹⁰ is a hydrogen atom (H), C₁₋₂alkyl, C₁₋₂fluoroalkyl, CH₂C(O)NH₂, C(O)NH₂, C(O)NHMe, C(O)-C₁₋₂alkyl, C(O)-C₁fluoroalkyl or -C(O)-CH₂O-C₁₋₂alkyl;

5

and wherein in R³ the C₃-cycloalkyl or the heterocyclic group of sub-formula (aa), (bb) or (cc) is optionally substituted on a ring carbon with one or two substituents independently being oxo (=O); OH; C₁₋₂alkoxy; C₁₋₂fluoroalkoxy; NHR²¹ wherein R²¹ is a hydrogen atom (H) or C₁₋₄ straight-chain alkyl; C₁₋₂alkyl; C₁₋₂fluoroalkyl;

10 -CH₂OH; -CH₂CH₂OH; -CH₂NHR²² wherein R²² is H or C₁₋₂alkyl; -C(O)OR²³ wherein R²³ is H or C₁₋₂alkyl; -C(O)NHR²⁴ wherein R²⁴ is H or C₁₋₂alkyl; -C(O)R²⁵ wherein R²⁵ is C₁₋₂alkyl; fluoro; hydroxyimino (=N-OH); or (C₁₋₄alkoxy)imino (=N-OR²⁶ where R²⁶ is C₁₋₄alkyl); and wherein any OH, alkoxy, fluoroalkoxy or NHR²¹ substituent is not substituted at the R³ ring carbon attached (bonded) to the -NH-group of formula (I) and is not substituted at either R³ ring carbon bonded to the Y group of the heterocyclic group (aa), (bb) or (cc);

and wherein, when R³ is optionally substituted mono-unsaturated-C₅-7cycloalkenyl, then the cycloalkenyl is optionally substituted with one substituent being fluoro or C₁-2alkyl or two substituents independently being fluoro or methyl, and the R³ ring carbon bonded to the -NH- group of formula (I) does not partake in the cycloalkenyl double bond;



or R³ is a bicyclic group of sub-formula (ee): (ee) wherein Y¹, Y² and Y³ independently are CH₂ or oxygen (O) provided that no more than one of Y¹, Y² and Y³ is oxygen (O);

and wherein:

30 R⁴ and R⁵ are independently a hydrogen atom (H), methyl, ethyl, n-propyl, isopropyl, C₁₋₂fluoroalkyl, cyclopropyl, -CH₂OR^{4a}, -CH(Me)OR^{4a}, or -CH₂CH₂OR^{4a}, wherein R^{4a} is a hydrogen atom (H), methyl (Me), or C₁fluoroalkyl such as CF₃ or CHF₂.

and wherein, in sub-formula (x) (y) and (y1):

A is C-R^{6A}, nitrogen (N) or nitrogen-oxide (N⁺-O⁻),

5 B is C-R^{6B}, nitrogen (N) or nitrogen-oxide (N⁺-O⁻),

D is C-R^{6D}, nitrogen (N) or nitrogen-oxide (N⁺-O⁻),

E is C-R^{6E}, nitrogen (N) or nitrogen-oxide (N⁺-O⁻),

F is C-R^{6F}, nitrogen (N) or nitrogen-oxide (N⁺-O⁻),

10 wherein, R^{6A}, R^{6B}, R^{6D}, R^{6E} and R^{6F} independently are: a hydrogen atom (H), a halogen atom; C₁₋₆alkyl; C₁₋₄fluoroalkyl; C₃₋₆cycloalkyl; C₁₋₄alkoxy; C₁₋₂fluoroalkoxy; C₃₋₆cycloalkyloxy; -C(O)R^{16a}; -C(O)OR³⁰; -S(O)₂-R^{16a}; R^{16a}-S(O)₂-NR^{15a}-; R⁷R⁸N-S(O)₂-; C₁₋₂alkyl-C(O)-R^{15a}N-S(O)₂-; C₁₋₄alkyl-S(O)-, Ph-S(O)-, R⁷R⁸N-CO-; -NR¹⁵-C(O)R^{16a}; R⁷R⁸N; nitro (-NO₂); OH (including any 15 tautomer thereof); C₁₋₄alkoxymethyl; C₁₋₄alkoxyethyl; C₁₋₂alkyl-S(O)₂-CH₂-; R⁷R⁸N-S(O)₂-CH₂-; C₁₋₂alkyl-S(O)₂-NR^{15a}-CH₂-; -CH₂-OH; -CH₂CH₂-OH; -CH₂-NR⁷R⁸; -CH₂-CH₂-NR⁷R⁸; -CH₂-C(O)OR³⁰; -CH₂-C(O)-NR⁷R⁸; -CH₂-NR^{15a}-C(O)-C₁₋₃alkyl; -(CH₂)_n¹⁴-Het¹ where n¹⁴ is 0 or 1; cyano (-CN); Ar^{5b}; or phenyl, pyridinyl or pyrimidinyl wherein the phenyl, pyridinyl or pyrimidinyl 20 independently are optionally substituted by one or two of fluoro, chloro, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy;

and/or two adjacent groups selected from R^{6A}, R^{6B}, R^{6D}, R^{6E} and R^{6F} are taken together and are: -CH=CH-CH=CH₂-; -(CH₂)_n^{14a}- where n^{14a} is 3, 4 or 5, -O-(CMe₂)-O-, -O-(CH₂)_n^{14b}-O- where n^{14b} is 1 or 2; -CH=CH-NR^{15b}-;

25 -N=CH-NR^{15b}-; -CH=N-NR^{15b}-; -N=N-NR^{15b}-; -CH=CH-O-; -N=CH-O-; -CH=CH-S-; or -N=CH-S-; wherein R^{15b} is H or C₁₋₂alkyl;

provided that:

30 two or more of A, B, D, E and F are independently C-H (carbon-hydrogen), C-F (carbon-fluorine), nitrogen (N), or nitrogen-oxide (N⁺-O⁻);

and no more than two of A, B, D, E and F are independently nitrogen or nitrogen-oxide (N⁺-O⁻),

and no more than one of A, B, D, E and F is nitrogen-oxide (N⁺-O⁻);

35

and wherein, in sub-formula (z):

G is O or S or NR⁹ wherein R⁹ is a hydrogen atom (H), C₁₋₄alkyl, or C₁₋₂fluoroalkyl;

J is C-R^{6J}, C-[connection point to formula (I)], or nitrogen (N),

L is C-R^{6L}, C-[connection point to formula (I)], or nitrogen (N),
 M is C-R^{6M}, C-[connection point to formula (I)], or nitrogen (N),
 Q is C-R^{6Q}, C-[connection point to formula (I)], or nitrogen (N),

5 wherein, R^{6J}, R^{6L}, R^{6M} and R^{6Q} independently are: a hydrogen atom (H), a halogen atom; C₁₋₄alkyl; C₁₋₃fluoroalkyl; C₃₋₆cycloalkyl; C₁₋₄alkoxy; C₁₋₂fluoroalkoxy; C₃₋₆cycloalkyloxy; OH (including any tautomer thereof); or phenyl optionally substituted by one or two substituents independently being fluoro, chloro, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy;

10

provided that:

two or more of J, L, M and Q are independently C-H, C-F, C-C₁₋₂alkyl, C-[connection point to formula (I)], or nitrogen (N);
 and no more than three of J, L, M and Q are nitrogen (N);

15

and wherein:

R⁷ and R⁸ are independently a hydrogen atom (H); C₁₋₄alkyl; C₃₋₆cycloalkyl; or phenyl optionally substituted by one or two substituents independently being: fluoro, chloro, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy;

20 or R⁷ and R⁸ together are -(CH₂)_n⁶⁻ or -C(O)-(CH₂)_n⁷⁻ or -C(O)-(CH₂)_n¹⁰⁻-C(O)- or -(CH₂)_n⁸⁻X⁷-(CH₂)_n⁹⁻ or -C(O)-X⁷-(CH₂)_n¹⁰⁻ in which: n⁶ is 3, 4, 5 or 6, n⁷ is 2, 3, 4, or 5, n⁸ and n⁹ and n¹⁰ independently are 2 or 3, and X⁷ is O or NR¹⁴;

25

R^{7a} is a hydrogen atom (H) or C₁₋₄alkyl;

R^{8a} is a hydrogen atom (H) or methyl;

30 R¹⁴, R¹⁷ and R^{17a} independently are: a hydrogen atom (H); C₁₋₄alkyl; C₁₋₂fluoroalkyl (e.g. CF₃); cyclopropyl; -C(O)-C₁₋₄alkyl; -C(O)NR^{7a}R^{8a}; or -S(O)₂-C₁₋₄alkyl;

R^{15a}, independent of other R^{15a}, is a hydrogen atom (H) or C₁₋₄alkyl;

35

R^{16a} is:

C₁₋₆alkyl;

C₃₋₆cycloalkyl optionally substituted by one oxo (=O), OH or C₁₋₂alkyl substituent; C₃₋₆cycloalkyl-CH₂-;

40

pyridinyl optionally substituted on a ring carbon atom by one of: a halogen atom, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy;

Ar^{5c} ;

phenyl optionally substituted by one or two substituents independently being: a halogen atom, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy;

benzyl optionally substituted on its ring by one or two substituents independently being: a halogen atom, C₁₋₂alkyl, C₁fluoroalkyl, C₁₋₂alkoxy or C₁fluoroalkoxy; or

5 a 4-, 5-, 6- or 7-membered saturated heterocyclic ring connected at a ring-carbon and containing one or two ring-hetero-atoms independently selected from O, S, and N;

wherein any ring-nitrogens which are present are present as NR²⁷ where R²⁷ is H, C₁₋₂alkyl or -C(O)Me; and wherein the ring is optionally substituted at carbon by one

10 C₁₋₂alkyl or oxo (=O) substituent, provided that any oxo (=O) substituent is substituted at a ring-carbon atom bonded to a ring-nitrogen;

R³⁰, independent of other R³⁰, is a hydrogen atom (H), C₁₋₄alkyl or C₃₋₆cycloalkyl;

15 Ar^{5b} and Ar^{5c} independently is/are a 5-membered aromatic heterocyclic ring containing one O, S or NR^{15a} in the 5-membered ring, wherein the 5-membered ring can optionally additionally contain one or two N atoms, and wherein the heterocyclic ring is optionally substituted on a ring carbon atom by one of: a halogen atom, C₁₋₂alkyl, C₁fluoroalkyl, -CH₂OH, -CH₂-OC₁₋₂alkyl, OH (including the keto tautomer thereof) or

20 -CH₂-NR²⁸R²⁹ wherein R²⁸ and R²⁹ independently are H or methyl; and

Het¹, is a 4-, 5-, 6- or 7-membered saturated heterocyclic ring connected at a ring-carbon and containing one or two ring-hetero-atoms independently selected from O, S, and N; wherein any ring-nitrogens which are present are present as NR³¹ where R³¹ is H, C₁₋₂alkyl or -C(O)Me; and wherein the ring is optionally substituted at carbon by one C₁₋₂alkyl or oxo (=O) substituent, provided that any oxo (=O) substituent is substituted at a ring-carbon atom bonded to a ring-nitrogen.

30 2. A compound or salt as claimed in claim 1, wherein R¹ is C₂₋₃alkyl, C₂fluoroalkyl or -CH₂CH₂OH.

3. A compound or salt as claimed in claim 2, wherein R¹ is ethyl, n-propyl or -CH₂CH₂OH.

35 4. A compound or salt as claimed in claim 3, wherein R¹ is ethyl.

5. A compound or salt as claimed in claim 1, 2, 3 or 4, wherein R² is C₂₋₄alkyl, C₃₋₅cycloalkyl or -CH₂cyclopropyl.

40

6. A compound or salt as claimed in claim 5, wherein R² is ethyl, propyl, cyclopropyl, cyclobutyl, cyclopentyl or cyclopropylmethyl.

7. A compound or salt as claimed in any preceding claim, wherein in R³ there is one
5 substituent or no substituent.

8. A compound or salt as claimed in any preceding claim, wherein R³ is the
optionally substituted C₃₋₈cycloalkyl or the optionally substituted heterocyclic group of
sub-formula (aa), (bb) or (cc).

10 9. A compound or salt as claimed in any preceding claim, wherein, when R³ is
optionally substituted C₃₋₈cycloalkyl, it is optionally substituted cyclohexyl.

15 10. A compound or salt as claimed in any preceding claim, wherein, when R³ is
optionally substituted C₃₋₈cycloalkyl, then R³ is C₆₋₇cycloalkyl optionally substituted
with one or two substituents independently being oxo (=O); OH; NHR²¹ wherein R²¹ is
a hydrogen atom (H); methyl; -CH₂F; -CHF₂; -C(O)OR²³ wherein R²³ is H;
-C(O)NHR²⁴ wherein R²⁴ is H; fluoro; hydroxyimino (=N-OH); or methoxyimino
(=N-OR²⁶ where R²⁶ is methyl).

20 11. A compound or salt as claimed in any claim 10, wherein, when R³ is optionally
substituted C₃₋₈cycloalkyl, then R³ is C₆₋₇cycloalkyl optionally substituted with one or
two substituents independently being OH; -C(O)NHR²⁴ wherein R²⁴ is H; oxo (=O) or
hydroxyimino (=N-OH).

25 12. A compound or salt as claimed in any preceding claim, wherein, for R³, the one
or two optional R³ substituents if present is or are substituent(s):
(a) at the 3-position of a R³ cyclobutyl ring, or
30 (b) at the 3- and/or 4- position(s) of a R³ cyclopentyl or cyclopentenyl ring, or
(c) at the 3-, 4- and/or 5- position(s) of a R³ cyclohexyl or cyclohexenyl ring, or
(d) at the 3-, 4-, 5- and/or 6- position(s) of a R³ cycloheptyl or cycloheptenyl ring, or
(e) at the 3-, 4-, 5-, 6- and/or 7- position(s) of a R³ cyclooctyl ring,
and/or
(f) at the 1-, 2- and/or highest-numbered- position(s) of a R³ cycloalkyl or cycloalkenyl
35 ring, for alkyl or fluoroalkyl substituent(s), and/or
(g) at the 2- and/or highest-numbered- position(s) of a R³ cycloalkyl or cycloalkenyl ring,
for NHR²¹ substituent(s).

40 13. A compound or salt as claimed in any preceding claim, wherein, when R³ is the
heterocyclic group of sub-formula (aa), (bb) or (cc), then Y is O or NR¹⁰.

14. A compound or salt as claimed in any preceding claim, wherein R¹⁰ is H, C(O)NH₂ or C(O)methyl.

15. A compound or salt as claimed in claim 14, wherein R¹⁰ is C(O)NH₂.

5

16. A compound or salt as claimed in any preceding claim, wherein, when R³ is the heterocyclic group of sub-formula (aa), (bb) or (cc), then R³ is the heterocyclic group of sub-formula (bb) and n¹ is 1.

10 17. A compound or salt as claimed in any preceding claim, wherein, in R³, the heterocyclic group of sub-formula (aa), (bb) or (cc) is unsubstituted on a ring carbon.

18. A compound or salt as claimed in any preceding claim, wherein:

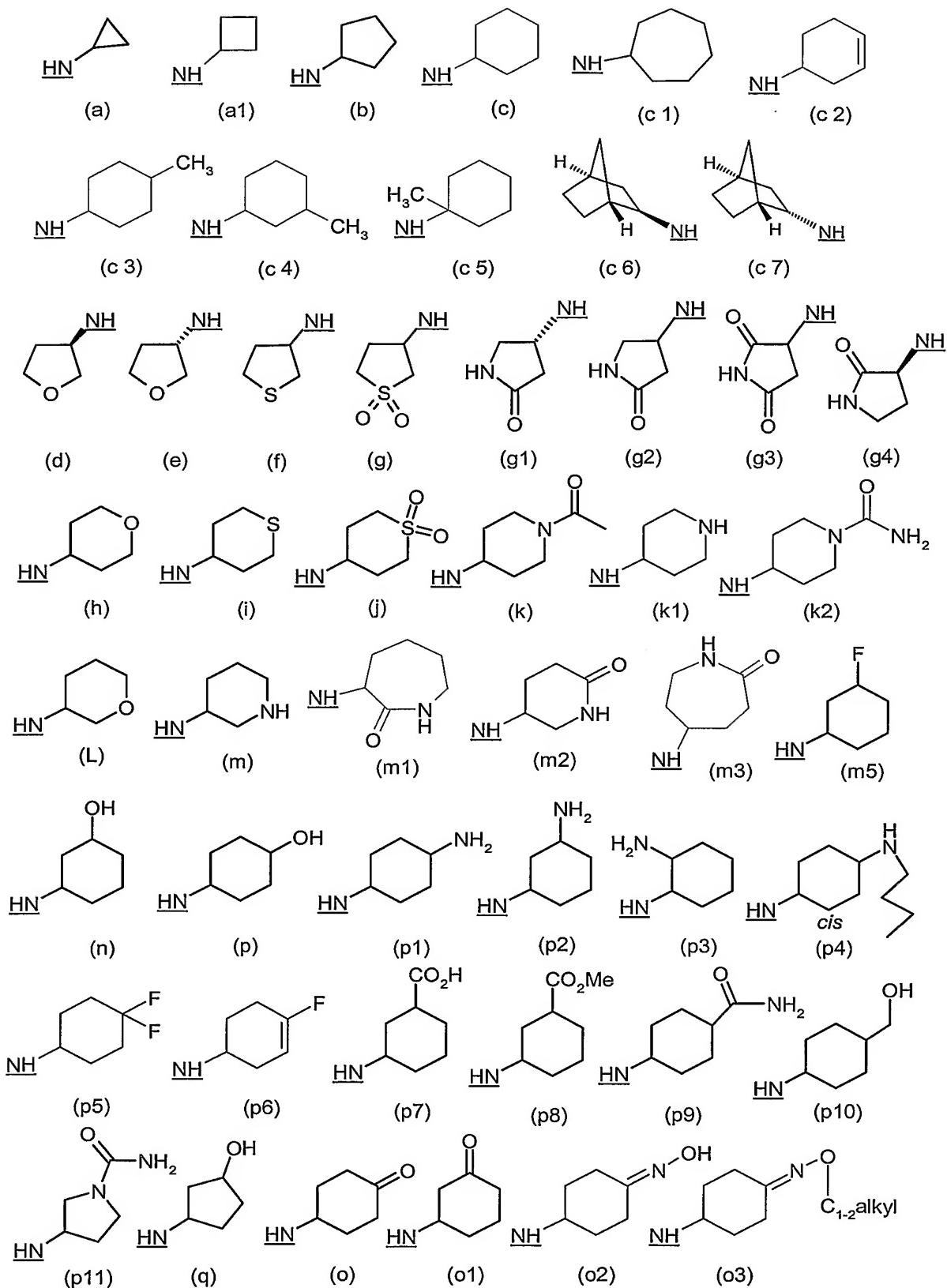
15 when R³ is optionally substituted mono-unsaturated-C₅-₇cycloalkenyl, it is mono-unsaturated-cyclohexenyl optionally substituted with one or two substituents independently being fluoro or methyl.

and when R³ is a bicyclic group of sub-formula (ee), then Y¹, Y² and Y³ are all CH₂.

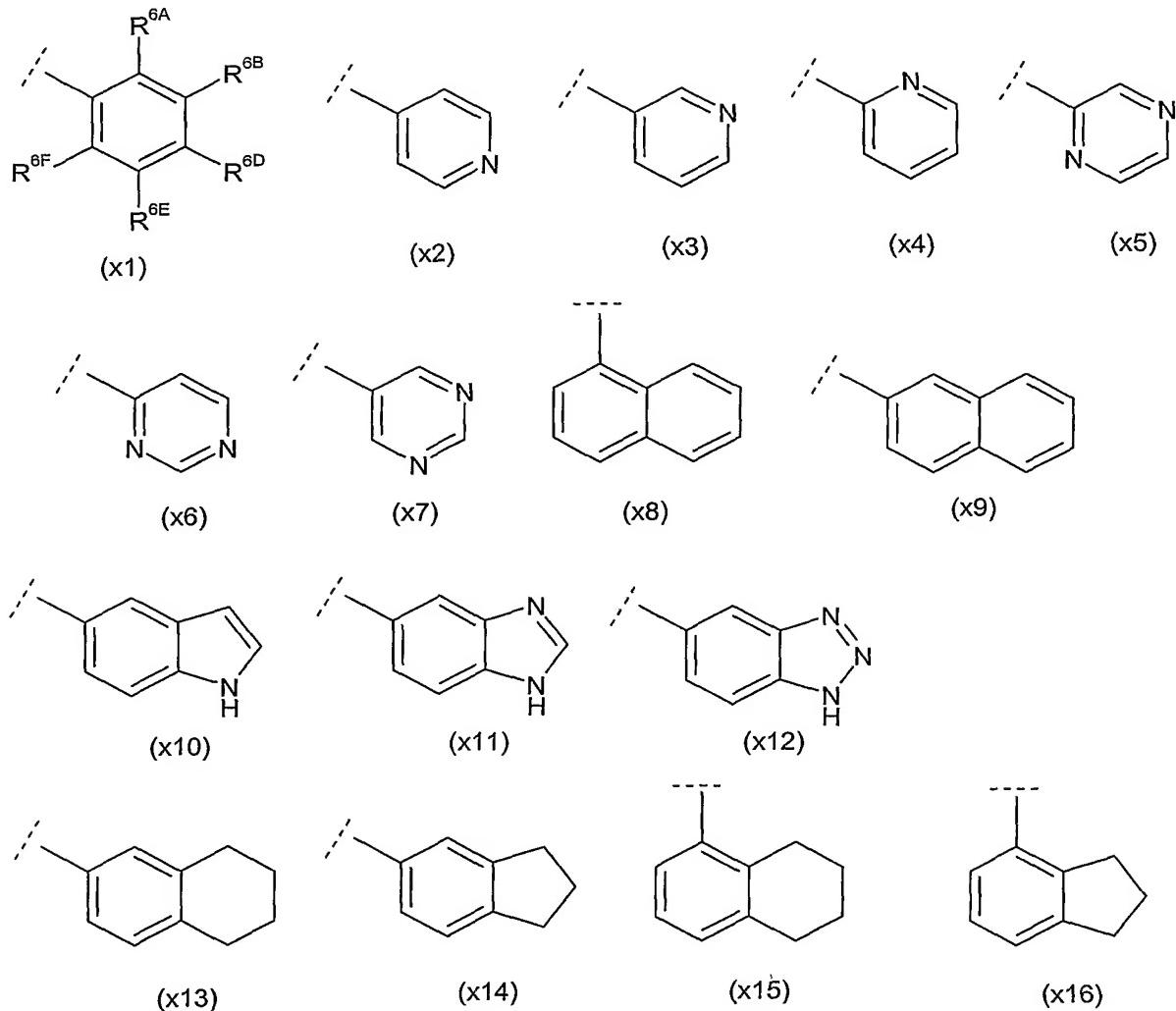
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19. A compound or salt as claimed in any preceding claim, wherein NHR³ is of sub-formula (a), (a1), (b), (c), (c 1), (c 2), (c 3), (c 4), (c 5), (c 6), (c 7), (d), (e), (f), (g), (g1), (g2), (g3), (g4), (h), (i), (j), (k), (k1), (k2), (L), (m), (m1), (m2), (m3), (m5), (n), (o), (o1), (o2), (o3), (p), (p1), (p2), (p3), (p4), (p5), (p6), (p7), (p8), (p9), (p10), (p11) or (q):

25



20. A compound or salt as claimed in claim 19, wherein NHR³ is of sub-formula (c), (c1), (c 4), (c 5), (h), (i), (j), (k), (k2), (m1), (m2), (n), (o), (o2), (o3), (p2), (p5), (p6), (p9), (p11) or (q).
- 5 21. A compound or salt as claimed in claim 19, wherein NHR³ is of sub-formula (c), (p11), (h), (k2), (n), (o), (o2) or (p9).
22. A compound or salt as claimed in claim 19, 20 or 21, wherein:
when NHR³ is of sub-formula (n), then it is in the *cis* configuration, i.e. it is a *cis*-
10 (3-hydroxycyclohexan-1-yl)amino group; and
when NHR³ is of sub-formula (p9), then it is in the *cis* configuration, i.e. it is a *cis*-[4-(aminocarbonyl)cyclohexan-1-yl]amino group.
- 15 23. A compound or salt as claimed in claim 19, wherein NHR³ is of sub-formula (h) or (k2), that is R³ is tetrahydro-2H-pyran-4-yl or 1-(aminocarbonyl)-4-piperidinyl.
24. A compound or salt as claimed in any preceding claim, wherein R⁴ is a hydrogen atom (H); methyl, ethyl, C₁ fluoroalkyl, -CH₂OH, -CH(Me)OH, -CH₂CH₂OH, or
20 -CH₂OMe.
25. A compound or salt as claimed in claim 24, wherein R⁴ is a hydrogen atom (H), methyl, ethyl, -CH₂OH, or -CH₂OMe.
- 25 26. A compound or salt as claimed in any preceding claim, wherein R⁵ is a hydrogen atom (H), methyl, ethyl, n-propyl, or iso-propyl.
27. A compound or salt as claimed in any preceding claim, wherein,
in sub-formula (x):
30 two or more of A, B, D, E and F are C-H (carbon-hydrogen); and one or more others of A, B, D, E and F are independently C-H (carbon-hydrogen), C-F (carbon-fluorine), C-Cl (carbon-chlorine), C-Me, C-OMe, or nitrogen (N); no more than one of A, B, D, E and F is nitrogen; and none of A, B, D, E and F are nitrogen-oxide (N⁺-O⁻).
- 35 28. A compound or salt as claimed in any preceding claim, wherein Ar has the sub-formula (x).
29. A compound or salt as claimed in claim 28, wherein Ar has the sub-formula (x),
40 and the sub-formula (x) is sub-formula (x1), (x2), (x3), (x4), (x5), (x6), (x7), (x8), (x9), (x10), (x11), (x12), (x13), (x14), (x15) or (x16):



30. A compound or salt as claimed in claim 29, wherein Ar has the sub-formula (x),
 5 and the sub-formula (x) is sub-formula (x1).

31. A compound or salt as claimed in claim 30, wherein Ar is of sub-formula (x1) and
 is: monoalkyl-phenyl-, mono(fluoroalkyl)-phenyl-, monohalo-phenyl-,
 monoalkoxy-phenyl-, mono(fluoroalkoxy)-phenyl-, dialkyl-phenyl-,
 10 monoalkyl-monohalo-phenyl-, dihalo-phenyl- or dihalo-monoalkyl-phenyl-.

32. A compound or salt as claimed in claim 31, wherein Ar is:
 monoC₁₋₄alkyl-phenyl-; monoC₁fluoroalkyl-phenyl-; monoC₁₋₃alkoxy-phenyl-;
 mono(C₁fluoroalkoxy)-phenyl-; diC₁₋₃alkyl-phenyl-;
 15 monoC₁₋₃alkyl-monohalo-phenyl-; dihalo-phenyl-; or dihalo-monoC₁₋₂alkyl-phenyl-.

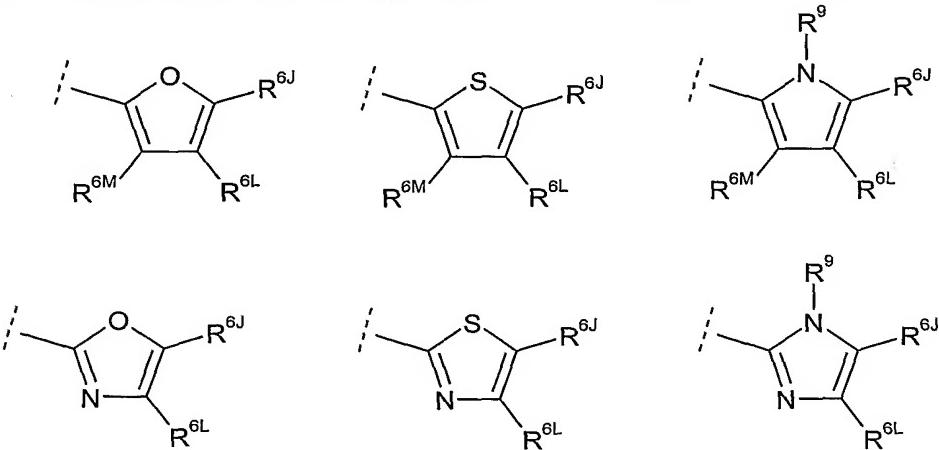
33. A compound or salt as claimed in any preceding claim, wherein,

in sub-formula (x), R^{6A}, R^{6B}, R^{6D}, R^{6E} and R^{6F}, independently of each other, are: a hydrogen atom (H), a fluorine, chlorine or bromine atom, methyl, ethyl, n-propyl, isopropyl, trifluoromethyl, -CH₂OH, methoxy, ethoxy, n-propoxy, difluoromethoxy, OH or MeS(O)₂⁻.

5

34. A compound or salt as claimed in any preceding claim, wherein R⁹ is a hydrogen atom (H) or methyl; R^{6J}, R^{6L}, R^{6M} and R^{6Q} independently are H, OH (including any keto tautomer thereof), C₁₋₂alkyl or C₁fluoroalkyl; and

10 when Ar has the sub-formula (z), then sub-formula (z) is one of the following:



15 35. A compound or salt as claimed in claim 1, which is one of Examples 1 to 29, as a compound or a pharmaceutically acceptable salt thereof.

36. A compound or salt as claimed in any preceding claim, for use as an active therapeutic substance in a mammal.

20 37. A pharmaceutical composition comprising a compound of formula (I) or a pharmaceutically acceptable salt thereof, as defined in any of claims 1 to 35, and one or more pharmaceutically acceptable carriers and/or excipients.

25 38. The use of a compound of formula (I) or a pharmaceutically acceptable salt thereof, as defined in any of claims 1 to 35, in the manufacture of a medicament for the treatment and/or prophylaxis of an inflammatory and/or allergic disease in a mammal.

30 39. The use as claimed in claim 38, wherein the inflammatory and/or allergic disease is chronic obstructive pulmonary disease (COPD), asthma, rheumatoid arthritis or allergic rhinitis in a human.

40. A method of treatment and/or prophylaxis of an inflammatory and/or allergic disease in a human in need thereof, which method comprises administering to the human a therapeutically effective amount of a compound of formula (I) or a pharmaceutically acceptable salt thereof as defined in any of claims 1 to 35.